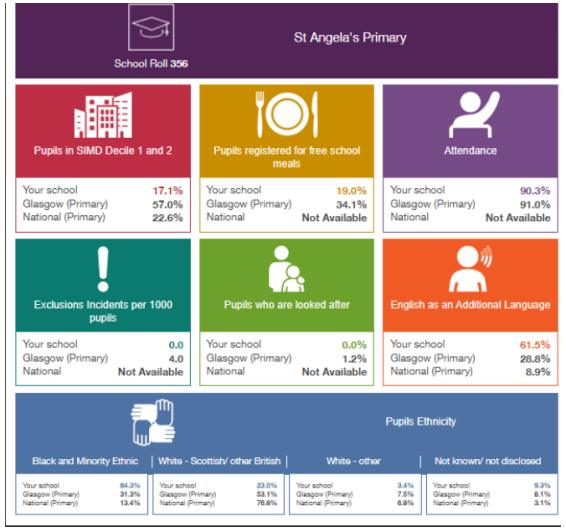
St Angela's Primary Numeracy and Mathematics Policy

Our School Context



- St Angela's is in the Southside of Glasgow . We serve the Roman Catholic population of Darnley. However we also welcome children from other faiths and no faith background. Home, Church and School work together in partnership with our children. Our Nursery Class is non-denominational.
- As a Catholic School our vision is to nurture, challenge and achieve within a secure, happy and stimulating environment.
- We provide the highest standard of education possible within a caring, Catholic ethos. We are committed to creating every opportunity for your child to succeed and to be an independent, confident, responsible and successful individual. It is important that our children feel happy, safe and respected in order to fulfil his/her potential and develop an enthusiasm for lifelong learning.
- St. Angela's is made up of an open plan main building, opened in 1977 with 7 double class bases, two sets of huts, one housing two classes and the other housing four classes and a nursery class base. The school environment is warm, bright, welcoming and attractive and the school's surrounding grounds are well-cared for.
- Our school provides a broad, general education which promotes the aims of the Scottish Executive's 'Curriculum for Excellence'.

Rationale

"Numeracy is the responsibility of all; therefore we commit to making the most of Numeracy learning opportunities, including Numeracy across Learning." **Building the Curriculum 1**

*"We want our young people to engage with mathematics and build their comprehension of the subject across the curriculum. Society requires young people who are sophisticated mathematical thinkers, pattern spotters and problem solvers. Therefore, we aim to empower our young people as mathematicians. We aim to provide opportunities for learning that promote deep engagement with all areas of numeracy and mathematics. Our purpose is to offer a better way to build mathematical understanding in, and beyond, our classrooms"- **Glasgow Counts***

"It is our Aim that this policy will offer a framework which will support the Teaching and Learning of Numeracy and Mathematics at St Angela's Primary and ensure consistency and progression along with achievement and self confidence for our learners."

St Angela's Staff

Numeracy and Mathematics

A Curriculum for Excellence identifies 3 areas of study. The experiences and outcomes are organised into the following sections:-

Number, Money and Measure

Estimation and rounding; Number and number processes; Multiples, factors and primes; Powers and roots; Fractions decimals and percentages; Money; Time; Measurement; Mathematics- its impact on the world, past, present and future; Patterns and relationships; Expressions and equations

Shape position and movement

Properties of 2D shapes and 3D Objects; Angle Symmetry and Transformation

Information Handling

Data and analysis; Ideas of chance and uncertainty

These areas are not necessarily taught in isolation, rather it is important that links are made between these experiences and outcomes.

Our Aims

- •to use the CPA approach to develop conceptual understanding
- • to develop problem solving, reasoning and fluency
- • to create mathematical mindsets
- • to develop mastery learning
- • to engage in Maths Talk
- • to meet the needs of all learners.
- • to encourage family learning in the area of Numeracy and Mathematics

Methodology

Lessons should follow 'the Good Lesson' Model

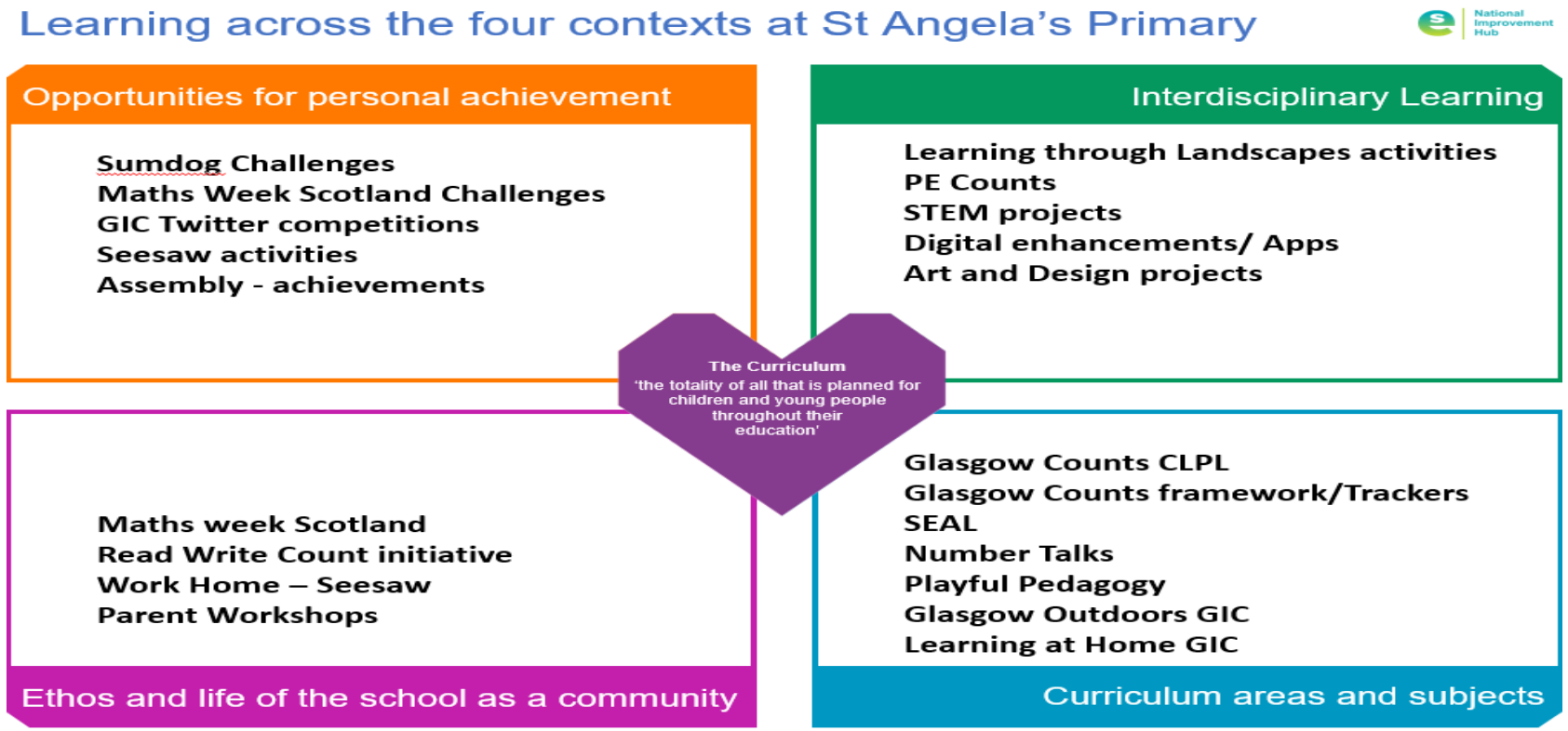
- **Numeracy and Mathematics should be taught every week following GC Framework. (time allocated dependant on age and stage of pupils)**
- **Where possible a concept should be taught to whole class and differentiated appropriately.**
- **Practical resources should provided during lessons allowing pupils to be empowered in their use of concrete and visual materials. CPA approach evident.**
- **Number talk should be evident in our classrooms—children should be able to explain their thinking and strategies used to solve problems.**
- **Misconceptions should be addressed within the same lesson or, day if possible. Appropriate use of Formative Assessment strategies should allow these to be identified.**
- **Support for Learning**
- **Pupils will have planned support from Class Teachers – Staged Intervention.**
- **Pupils may be supported by Support for Learning Workers – Maths Recovery Programme(SEAL)**
- **CLOL groups for Numeracy/Maths have been set up as pupils have been allocated to these as deemed appropriate in consultation with SLT, during Tracking Conversations.**
- **Opportunities for Peer support, talk partners and group tasks should be utilised.**
- **Concrete resource enablers and appropriate scaffolding should be provided as appropriate to meet individual pupil needs within the classroom.**

Glasgow Counts - Pedagogy

- Our hardworking staff are dedicated to completing Continuous Professional Development to enhanced learning and teaching experiences in Numeracy and Mathematics.
- We use the GCC Glasgow Counts approaches across the school.
- Our school use the Glasgow Counts framework to plan collaboratively and ensure breadth, challenge and application while effectively making key connections in learning that allow for an appropriate spread of concepts being taught.
- Our planners are in line with Glasgow Counts trackers and allow for links to be made across all areas of Numeracy and Mathematics.
- We use Glasgow Counts trackers to track pupils progress and achievement.
- We use the Benchmarks to ensure continuity.

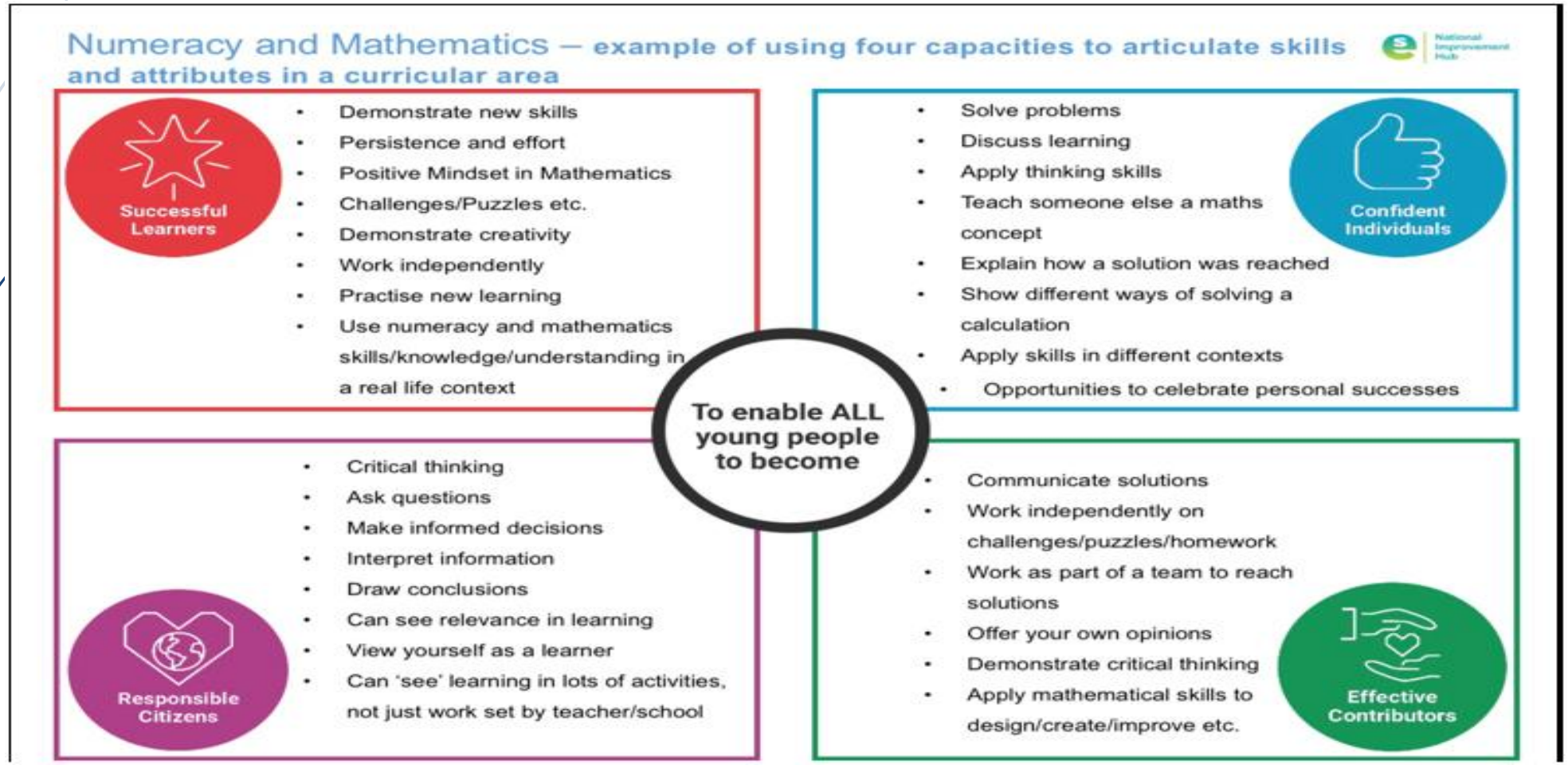
The 4 Contexts of Learning

Across the school, we ensure that Numeracy and Maths is an integral part of the four contexts for learning: we have a range of opportunities that enhance personal achievement, and we value and plan for interdisciplinary learning as a way of developing breadth, challenge and application. Numeracy and Maths is embedded in the life and work of our school community. The four contexts help develop our learners' knowledge, skills and attribute.



The 4 Capacities

- **We develop the four capacities specific to Numeracy and Mathematics and these are embedded in our planning**



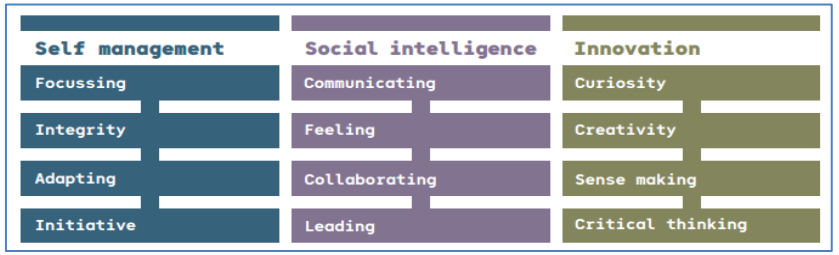
The 7 Design Principles

- **Our Numeracy provision takes account of the seven design principles:**
- We provide **Challenge and Enjoyment** through… *(Maths Week Scotland/ STEM workshops/ playful pedagogy/Digital/World of Work/Road Safety/Health Festival)*
- **Breadth and progression** are embedded in GCC Glasgow Counts framework which all staff use to ensure breadth of learning and to have a clear picture of what progression looks like within and across levels. (Insert link to link to framework). The **benchmarks** feature in the **GC framework** and in our tracking conversations.
- **Personalisation and Choice** is incorporated through our and all staff make reference to the **relevance** of Numeracy skills for learning, life and work.
- Our Numeracy curriculum is **coherent** in that we deliberately and consistently make links with other curricular areas – this is reflected in our planning and our Numeracy across learning displays.

Breadth	Progression	Depth	Personalisation and Choice	Coherence	Relevance
Offering a range of experiences *Learning within a variety of contexts *Within and beyond the classroom *Develop critical thinking and problem solving skills *balanced literacy/numeracy timetable * Play Based Learning	Building on knowledge and skills *framework/trackers, planning with Es and Os * Identifying gaps in learning/ planning for differentiation *Tracking conversations	Become metacognitive learners. Promoting different types of thinking and learning. *Effective questioning *Explaining their thinking *Modelling strategies – CPA Approach *communicates to a wide audience *Learning Conversations	Responding to interests and needs of the learner. Offering choice where appropriate. *Linking learning to personal interests *Use skills in all curricular areas- in the life and ethos of the school and makes links to personal achievements both in and out of school *Play Based Learning	Clear links between aspects of leaning. Bringing learning together. *IDL planning/opportunities *Bundling Es and Os within framework *Moderation tasks	Learning relevant to learners lives and learners' value what they are learning. *DYW/SLLW opportunities *Utilising local area for learning experiences *Visiting specialists – world of work – linking numeracy to a variety of occupations.

Skills for Learning Life and Work

Meta-skills



- ***"Our fundamental aim is to fill our young minds with a sense of agency and endow them with the motivation, courage and belief in their power to influence their own futures. We are driven by a commitment to create pathways to enable all stakeholders to possess skills for life, learning and work."*** **Glasgow Counts**

Self-Management

- **Sorting information into categories** Find, select and classify information
- **Highlighting key information -** with the ability to analyse and interpret information to draw conclusions
- **Solving problems –** Develop the use of critical thinking and problem solving skills
- **Try new strategies and approaches –** CPA approaches
- **Become independent learners –** Increase autonomy and reduce level of support, moving from concrete and pictorial CPA approach, towards more abstract concepts where appropriate.
- **Have a go and try new things**
- **Resilience**: Confidence in taking Initiative (including asking for help) and sustaining communication.
- Evaluate own and others' learning.
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Social Intelligence

- **Processing verbal or written communication -** Extend the use of mathematical vocabulary and develop rich discussion within numeracy
- **Understand and respond to information –** Information handling, analysing and interpreting to draw conclusions
- **Give written or verbal communication that others understand –** problem solving skills, displaying information (data handling skills)
- **Storytelling –** linking numeracy to real life examples, word problems, IDL
- **Responsibility and concern for wider society –** Apply skills and understanding in a wide range of new and unfamiliar situations (financial education – debt/profit/budgeting)
- **Developing others -** Evaluate own and others' learning.
- **Change catalyst –** communicating to a wider audience

Innovation

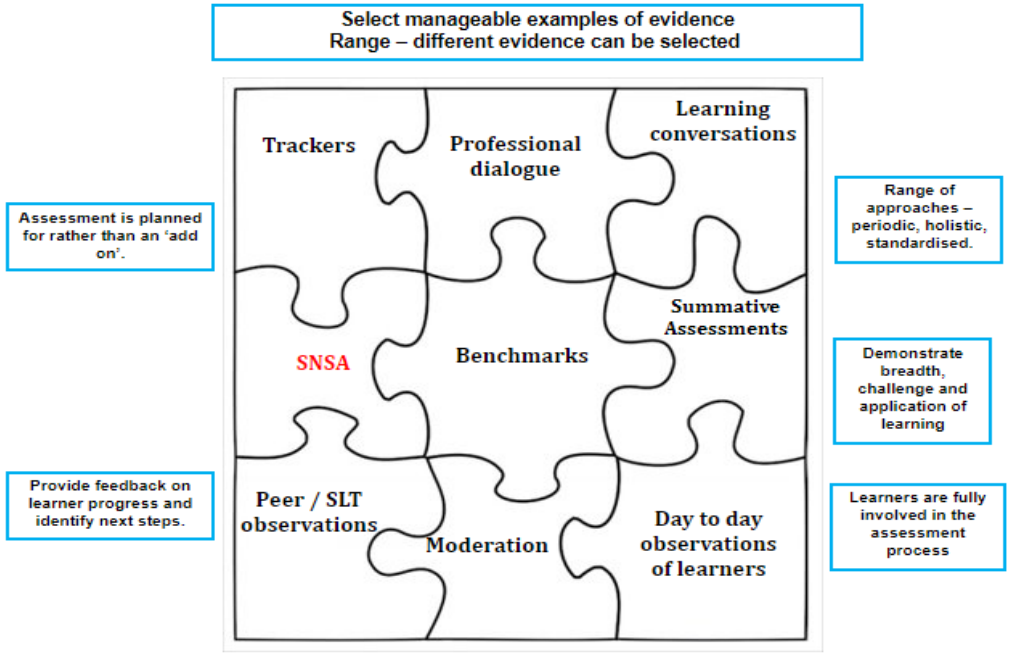
- **Sourcing information –** collecting, organising data
- **Problem Recognition** – CPA approach to problem solving and utilising skills
- **Ask questions to gain understanding –** interpreting data
- **Find relevant information –** analysing data
- **Imagination -** Apply skills and understanding in a wide range of new and unfamiliar situations, utilising problem solving skills to find solutions to potential problems
- **Pattern Recognition –** sequencing numbers, shapes, colours and classifying information in to groups
- **The Big Picture -** Communicate to wider audiences, both across the curriculum and beyond the place of learning
- **Analysis/computational thinking –** problem solving skills, analysing to draw conclusions

Assessment

- **Assessment is both formative and summative, and information is used to ensure that learners' needs are met. In addition to on-going observations leading to sound professional judgements, summative assessments are annually using the MALT assessment tool. The Glasgow Counts framework informs our termly tracking and quality assurance processes, allowing practitioners to identify any significant gaps in learning. Differentiation is evident in our planning, and we use a variety of tools to help SI (Staged Intervention) learners achieve at an appropriate level.**

Assessment Calendar

Class	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
P1	GMWP	PHON A	MB		RSR				SNSA		RTW
P2	GMWP	PIRA AUT		RTW			RTW	PIRA SPR		RTW	MALT 6
P3	GMWP	PIRA AUT		RTW			RTW	PIRA SPR		RTW	MALT 7
P4	GMWP	PIRA AUT		RTW		SNSA	RTW	PIRA SPR		RTW	MALT 8
P5	GMWP	PIRA AUT		RTW			RTW	PIRA SPR		RTW	MALT 9
P6	GMWP	PIRA AUT		RTW			RTW	PIRA SPR		RTW	MALT 10
P7	GMWP	PIRA AUT	SNSA	RTW			RTW	PIRA SPR		RTW	MALT 11



Reference Section:-Implementation

Number Money Measure	
Organiser	**Action**
Estimating and Rounding	• Glasgow Counts Framework – all stages use the trackers to support skills progression across early, first and second level. • CPA Guidelines and resources on shared area, including Steve Wyborney estimation PowerPoints. • Number Talks – activities. • Mathsbot – Interactive activities to support understanding. • Glasgow Outdoors opportunities – links to the GIC tile, supporting estimation using natural materials outdoors. • Resources – Place value materials such as counters/ dienes/ arrow cards etc

Number and Number Processes

- Glasgow Counts Framework – all stages use the trackers to support skills progression across early, first and second level.
- Language of Maths – guidance can be found on the Framework and should be displayed in the classroom
- Number Sense Routines - All classes take part in daily number sense routines. SEAL box /Youtube
- Sumdog – all classes have access to Sumdog to support understanding and develop mental agility.
- CPA -Utilising CPA strategies for the 4 operations to support understanding of addition, subtraction, multiplication and division.
- The Counting Stick - the counting stick is used to support number processes and to support teaching, learning and understanding of the times tables.
- Number Talks– whole school training provided, all staff given a resource pack to support daily Number Talk activities.
- Strategy Posters – Each class has been provided with a set of stage appropriate posters to display based for Glasgow Counts strategies for the four operations.
- Support booklets – staff have been given the Glasgow Counts strategy booklets for addition, subtraction, multiplication and division.
- MathsBot – digital resource to support CPA approaches. Used to support teaching, learning and understanding.
- White Rose Maths /Teejay/Heinemann/Maths in Action
- Digital enhancements – websites/ Ipad apps to support Number processes.
- Resources - Each class provided with a box of resources – concrete materials to support understanding including counters/ten frames/rekenrek/abacus /numicon /dienes/ Place Value counters etc
- Twinkl – morning starters/ stage and level activities/concept powerpoints

Multiplies, Factors and Prime

- Glasgow Counts Framework – all stages use the trackers to support skills progression across early, first and second level.
- Resource – hundred squares are provided within each class SEAL box and are utilised to support identifying multiples, factors and prime numbers.
- White Rose Maths, Heinemann and Teejay
- Maths Bot- interactive activities to support understanding.
- Digital Enhancements – websites and ipad apps to support understanding

Powers and Roots

- Glasgow Counts Framework – all stages use the trackers to support skills progression across early, first and second level.
- White Rose Maths/ Heinemann/ Teejay
- Digital Enhancements – websites and ipad apps to support understanding.
- Resources – practical resources such as dienes/counters used to support understanding.

Fractions, Decimals and Percentages

- Glasgow Counts Framework – all stages use the trackers to support skills progression across early, first and second level.
- Resources – decimal number square/ flip charts used to support understanding
- Resources – fractions walls, fractions tiles and fraction plates in Glasgow Counts CPA box.
- MathsBot – digital resource to support CPA approaches. Used to support teaching, learning and understanding.
- White Rose Maths, Heinemann and Teejay
- Sumdog challenges relating to FDP.
- Practical materials- Fruit/cake/pizza.
- Digital enhancements- websites such as Topmarks

Money

- Glasgow Counts Framework – all stages use the trackers to support skills progression across early, first and second level.
- Play based learning – shop set up in Numeracy Zone - allowing children to experience role play and take part in practical activities involving payment and change.
- Digital Enhancements –all classes have access to online resources, such as Topmarks to support learners in understanding of money.
- Enterprise – some class takes part in an enterprise activity for the Christmas fayre or charity event. They must use a budget to buy resources and set a price which will allow them to make a profit.
- Partnership – working in partnership with a local bank. Financial education is provided and opportunities to set up, manage and assess our own school bank.
- Resources – all classes have access to coins/ notes to develop understanding.
- White Rose Maths/Heinemann/Teejay/Maths in Action

Time

- Glasgow Counts Framework – all stages use the trackers to support skills progression across early, first and second level.
- Time Timelines –use time timelines to support calculating durations of time and solve time problems. Resources in CPA box.
- Calendars – monthly Calendars displayed in each class.
- Class timetable – each class displays timetable appropriate to age and stage.
- Health Week – during health week each class take part in a serious of timed activities, supporting learners in understanding durations of time.
- Resources – all classes have access to digital and analogue clocks to aid understanding.
- Digital Enhancements – websites such as Topmarks and Youtube to support understanding of time.

Measurement

- Glasgow Counts Framework – all stages use the trackers to support skills progression across early, first and second level.
- Estimation – a whole school focus on activities to encourage learners to estimate: Steve Wyborney activities – PowerPoints and resources in the shared area.
- The Counting Stick - the counting stick is used to support measure,
- Digital enhancements – websites and iPad used to enhance and support teaching and learning.
- Resources – trundle wheels/meter sticks/measuring tapes/ scales/ balances/ non-standard materials/Volume resources.
- Outdoor – Measuring outdoors –GIC tile
- Play Based Learning – water and sand trays
- Storybooks such as 'How big is my foot' to support understanding.

Mathematics – Impact on the World

- Glasgow Counts Framework – all stages use the trackers to support skills progression across early, first and second level.
- Famous Mathematicians – each class stage, early to second level, are asked to research a famous mathematician and discuss their impact on the world.
- Curriculum Links – classes are asked to link mathematics across the curriculum for example the history of time or money.
- STEM activities – develop understanding and using their skills in maths to solve problems.
- Coding – pupils have been introduced to coding and are using Spheros, beebots,and Scratch, building their understanding of how mathematics has impacted the world today and in the future.
- World of Work –our learners are exposed to career paths which utilise mathematics, showing its importance and spread.

Patterns and Relationships

- Glasgow Counts Framework – all stages use the trackers to support skills progression across early, first and second level.
- Patterns – learners use a variety of CPA approaches to support their understanding of numerical, geometrical and algebraic patterns.
- Resources – Geometric shapes/Puzzles
- Digital Enhancements – websites such as Topmarks/Go Noodle support understanding.
- Storybooks such as The Very Hungry Caterpillar, Elmer reinforce concept.

Expressions and Equations

- Glasgow Counts Framework – all stages use the trackers to support skills progression across early, first and second level.
- Algebra Tiles – Primary 7 have been introduced to algebra tiles to support understanding integers and equations.
- MathsBot – digital resource to support CPA approaches. Used to support teaching, learning and understanding.
- Coding –pupils are using beebots, probot and Scratch, building their understanding of how mathematics has impacted the world today and in the future.
- Resources – part part whole /magic triangles

Shape Position and Movement

Organiser	Action
Properties of 2D shapes and 3D objects	• Glasgow Counts Framework – all stages use the trackers to support skills progression across early, first and second level. • Chatterpix –to support and enhance the teaching of 2D and 3D shapes. • G.I.C. Glasgow Outdoors - There are a range of materials to support learning and teaching around shape, position and movement outdoors. • Resources – 2D shapes and 3D objects/ geometric shapes/ geoboards • Play Based Learning - Practical resources /Block Play • Digital Enhancements – websites and ipad apps to support understanding

Angle, symmetry and transformation

- Glasgow Counts Framework – all stages use the trackers to support skills progression across early, first and second level.
- Coding –pupils are using beebots, probot and scratch, building their understanding of angles and transformation.
- Outdoors – directions/compass points/ orienteering/ symmetry in nature and symmetrical pictures.
- Resources – concrete materials/ symmetry mirrors/faces/Protractors/compass/geoboards
- Digital enhancements – use of online resources and ipad apps to support understanding.

Information Handling

Organiser	Action
Data and analysis	• Glasgow Counts Framework – all stages use the trackers to support skills progression across early, first and second level. • Class Survey – related to topics relevant to stage. • Play based Learning – create axis using chalk/ tape • Outdoor Learning – create physical graphs. • White Rose Maths/ Heinemann/Teejay/Maths in Action • Resources – Rulers/squared paper/graph paper • Digital Enhancements – Our learners are encouraged to utilise the deployed iPads to explore Data and analysis. Apps such as numbers, keynote, book creator and excel support pupils to display and analyse data.

Ideas of chance and uncertainty

- **Glasgow Counts Framework – all stages use the trackers to support skills progression across early, first and second level.**
- **Resources – double sided counters/dice/card games/ spinners/ dominos/ coins used to support understanding.**
- **Digital Enhancements – websites such as nrich.maths**